-20V/-2A P-Channel MOSFET

Features

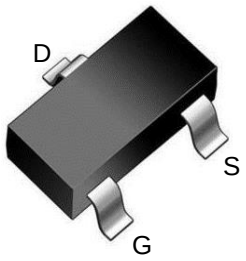
- Leading trench technology for low $R_{DS(on)}$
- Extending battery life

Product Summary

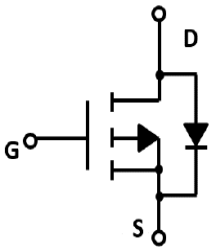
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-20V	100mΩ@4.5V	-2A
	140mΩ@2.5V	

Application

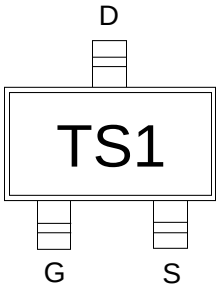
- High side load switch
- Charging circuit
- Single cell battery applications such as cell phones, digital cameras ,PDAs, etc



SOT-323 top view



Schematic diagram



TS1: Device code

Marking and pin assignment

Pb-Free

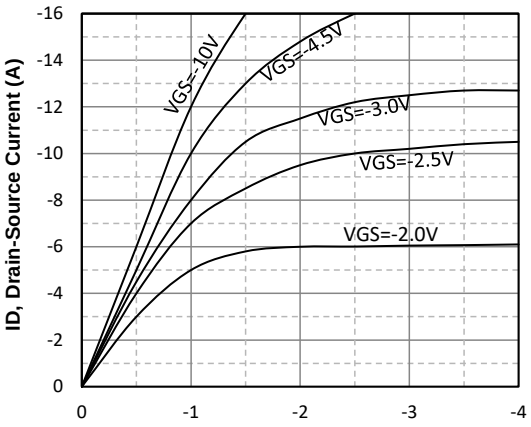
RoHS

Halogen-Free

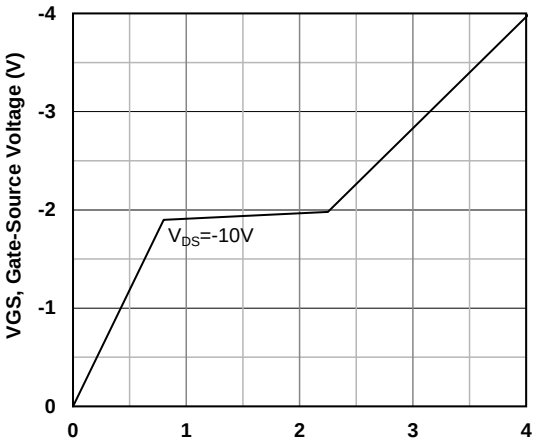
Absolute Maximum Ratings (TA=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		-20	V
V_{GS}	Gate-Source Voltage		±10	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	-2	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	-5	A
I_D	Continuous Drain Current@GS=10V	Tc=25°C	-2	A
P_D	Maximum Power Dissipation	Tc=25°C	0.29	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		431	°C/W

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$BV_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V，ID=-250μA	-20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	VDS=-20V，VGS=0V	--	--	-1	uA
I_{GSS}	Gate-Body Leakage Current	VGS=±10V，VDS=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS，ID=-250μA	-0.4	-0.62	-1.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	VGS=-4.5V，ID=-1.5A	--	75	100	mΩ
		VGS=-2.5V，ID=-1.5A	--	110	140	mΩ
		VGS=-1.8V，ID=-0.5A	--	150	300	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	VDS=-10V，VGS=0V， f=1MHz	--	327	--	pF
C_{OSS}	Output Capacitance		--	62	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	55	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	VDS=-10V，ID=-2A，VGS=-4.5V	--	4	--	nC
Q_{gs}	Gate Source Charge		--	0.7	--	nC
Q_{gd}	Gate Drain Charge		--	0.8	--	nC
$t_{d(on)}$	Turn-on Delay Time	VDD=-10V，ID=-1A，VGS=-4.5V，RG=2.5Ω	--	6	--	nS
t_r	Turn-on Rise Time		--	30	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	45	--	nS
t_f	Turn-Off Fall Time		--	46	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=-1A，	--	--	-1.2	V

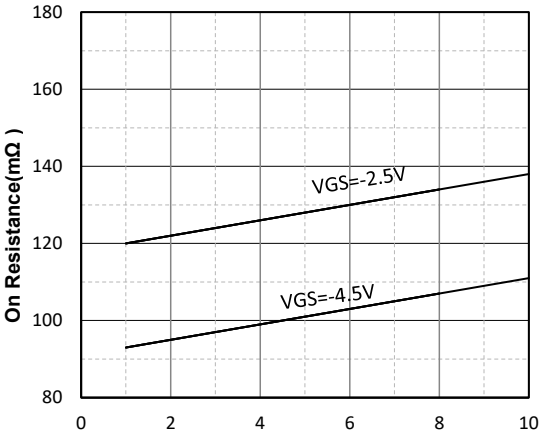
Typical Operating Characteristics



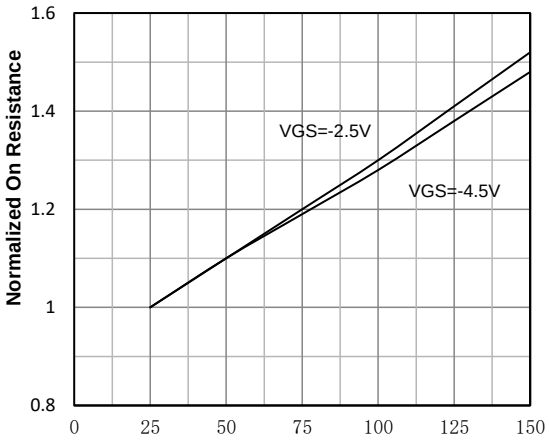
VDS, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



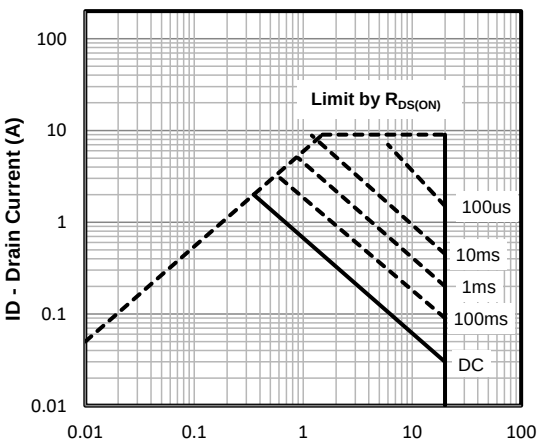
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



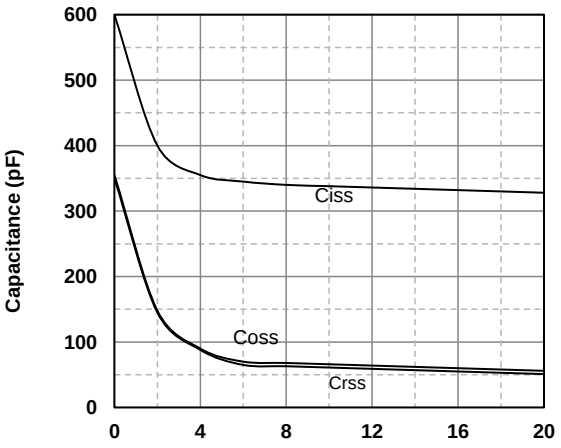
ID, Drain-Source Current (A)
Fig3. Drain-Source on Resistance



Tj - Junction Temperature (°C)
Fig4. Normalized On-Resistance Vs. Temperature

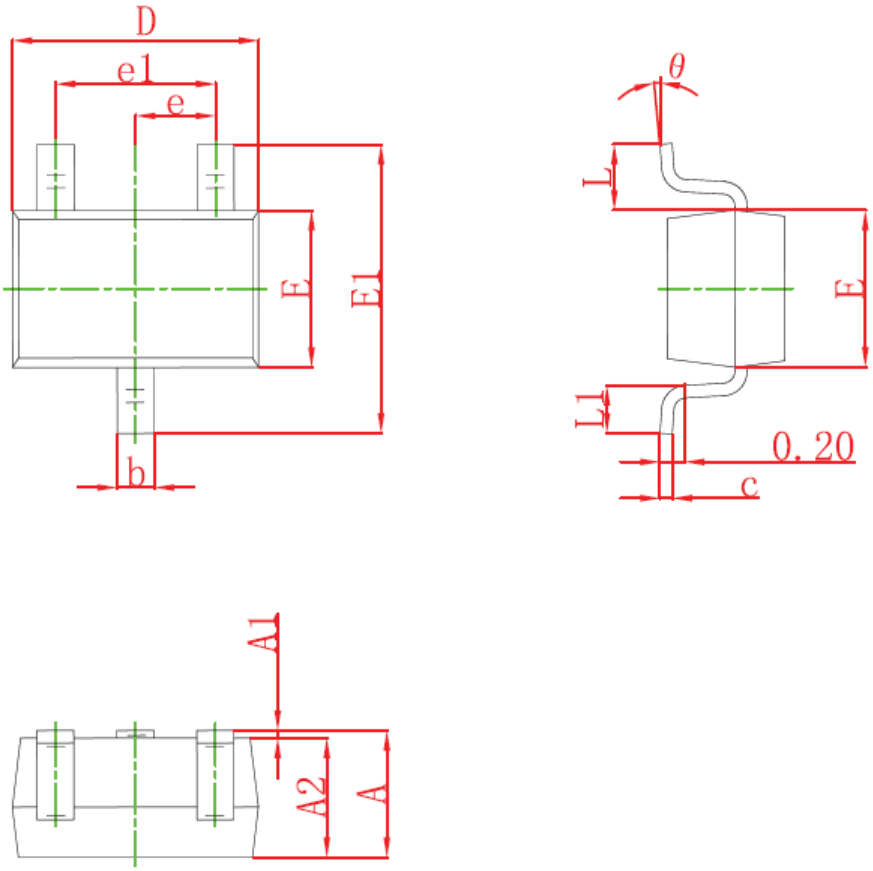


-VDS, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



VDS , Drain-Source Voltage (V)
Fig6 Typical Capacitance Vs.Drain-Source

SOT-323 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°